



Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

January 10, 1989

TO: Board of Oil, Gas and Mining

THRU: Kenneth E. May, Associate Director, Mining *SEM*

THRU: Lowell P. Braxton, Administrator *L.P.B.*

FROM: Holland Shepherd, Reclamation Specialist *HS*

RE: Request for Board Concurrence on Form and Amount of Surety
for Brush Wellman Incorporated, Topaz Mine, M/023/003

Brush Wellman is requesting Board approval of a \$311,300, self bond. The Division and operator have agreed upon a phase/steady-state bonding approach. Under the agreement, the bond would be reevaluated for each 15 year period the mine is in operation. The mine will operate for approximately 60 years. Over the life of the operation the rough reclamation costs equal \$970,300.

Please find attached: 1) an executive summary of the mine operation and reclamation plan; 2) a letter from Brush Wellman (Exhibit 1) describing the reclamation estimate and methodology for developing the estimate. Also find a letter from the Division (Exhibit 2) concurring with the operator's bond estimate for the 15 year period. This amount is slightly higher than that described in the original Brush letter, because of a late adjustment to the reclamation plan; 3) Self-Bonding form; 4) Self-Bonding Qualifications form.

A reclamation agreement has not been submitted at this time because the agreement form has not been finalized. The operator will be asked to complete one as soon as they are ready.

jb
Attachment
MN4/70

EXECUTIVE SUMMARY

Mine Name:	<u>Topaz Mine</u>	I.D. No.:	<u>M/023/003</u>
Operator:	<u>Brush Wellman Inc.</u>	County:	<u>Juab</u>
	<u>67 West 2950 South</u>	New/Existing:	<u>Existing</u>
	<u>Salt Lake City, Ut 84115</u>	Mineral Ownership:	<u>Mixed</u>
Telephone:	<u>(801) 467-5441</u>	Surface Ownership:	<u>Mixed</u>
Contact Person:	<u>Kenneth R. Paulson</u>	Lease No.(s):	<u>N/A</u>
Life of Mine:	<u>50 Years</u>	Permit Term:	<u>N/A</u>

Legal Description: Sections 5, 6, 8, 9, and 16, T13S, R12W

Mineral(s) to be Mined: Beryllium

Mining Methods: Open Pit using dozers and scrapers

Acres to be Disturbed: 1189

Present Land Use: Grazing, wildlife and mining

Postmining Land Use: Grazing and wildlife

Variances from Reclamation Standards (Rule M-10) Granted: M-10(4) Slopes, M-10(5) Highwalls, M-10(12) Revegetation, and M-10(14) Topsoiling

SOILS and GEOLOGY:

Soil Description: Generally classified as saline; on hills and side slopes undeveloped, shallow and stony; in swales undeveloped alluvium of sandy gravels and loams.

pH: 8.06 - 9.03

Special Handling Problems: Very little topsoil material exists at this site. Most of the reclamation growth medium will be composed of rhyolite overburden material. A large portion of the reclaimed disturbance is composed of a highly sodic-saline, volcanic, tuff material, which for most species is too toxic a growth medium. The tuff covered dump areas have been waived for the M-10(12) revegetation standard.

Geology Description: Dry alluvial slopes above interbedded, strata of rhyolite, limestone, and volcanic tuff.

HYDROLOGY:

Groundwater Description: Local aquifer water quality is highly saline, ground water lies below the mining zone. Clay in pits prevents pit water infiltration

Surface Water Description: Mine property intercepts runoff from several small watersheds which drain the southwest slope of the Spor Mountain. The runoff, when flowing, will run through ephemeral channels some of which intercept mine dumps and pits. Very little runoff leaves the site due to the dry characteristics of the site and high infiltration capacity of the alluvial slopes.

Water Monitoring Plan: N/A

ECOLOGY:

Vegetation Type(s); Dominant Species: Sagebrush, Saltbush, Rabbitbrush, Mormon Tea, Russian Thistle, Indian Ricegrass, Squirreltail, Bluebunch Wheatgrass, Halogeton, Shadscale, Snakeweed.

Percent Surrounding Vegetative Cover: 10 - 15%

Wildlife Concerns: Mine operation should have minimal impact.

Surface Facilities: Mining office and warehouse complex, no processing facilities on site.

Mining and Reclamation Plan Summary: The operator will mine out 13 pits during the course of this operation, disturbing approximately 1189 acres of Federal, State and private land. The overburden material is blasted, then removed by dozers and scrapers. Pits will range from 300-400 feet in depth.

Reclamation will be concurrent with the mining operation. Reclamation has already begun in some areas. 255 acres of tuff covered dumps will be left unreclaimed, and 177 acres of rhyolite covered dumps will be left untopsoiled. The remaining 757 acres will be reclaimed with available topsoil materials. Dump slopes will be left at angle of repose. Roads constructed after mining initiated will be reclaimed. Several of the pits will be backfilled.

DELETERIOUS MATERIALS:

Natural or Background Material: The volcanic tuff material is a highly saline-sodic material that will present a problem for future revegetation. The material presents no hazard to the hydrology of the area.

Man Made: not addressed

SURETY:

Amount: \$311,300
Form: Self Bond
Renewable Term: Phase, steady state bonding every 15 years

(Exhibit 1)

M/023/003

BRUSHWELLMAN
ENGINEERED MATERIALS

Brush Wellman Inc.
67 West 2950 South
Salt Lake City, UT 84115
Phone 801/467-5441

July 29, 1988

RECEIVED
JUL 29 1988

DIVISION OF
OIL, GAS & MINING

Mr. Lowell P. Braxton
Administrator, Mined Land Reclamation Program
Utah Division of Oil Gas and Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Topaz Mining Property
ACT/023/003
Juab County, Utah

Dear Mr. Braxton:

Enclosed please find Brush Wellman's reclamation bonding proposal for the Topaz Mining Property. This bonding proposal is based upon a suggestion by Division staff that, as alternative to the formerly proposed phase bonding, steady-state bonding be considered. In response to this suggestion, a steady-state bonding estimate has been prepared. In order to do so, it was necessary to revise the reclamation schedule so that the planned reclamation work more closely reflected steady state conditions. This was accomplished by changing the proposed timing for topsoil application and the geometry of dump construction so that topsoil will be applied to surfaces to be reclaimed in the year following its removal and storage in a stockpile. Dumps to be stockpiled will be constructed in stages such that the dump area to be disturbed at any one time is proportional to the disturbance created by the action that results in the salvaging of the topsoil. In addition to establishing more-or-less steady state conditions, this change will substantially reduce the period during which the topsoil will be stockpiled and will also reduce the area disturbed by dump construction to that necessary for waste rock disposal for each stage of pit development.

The steady-state bond estimate was created by determining the year in which individual reclamation liabilities are anticipated to be incurred, the years in which reclamation liability would be released, and then the cumulative reclamation liability for each year. The specific reclamation tasks, estimated cost, the anticipated year of incurrence of reclamation bond liability for each task, and the anticipated release date for each task are shown on the attached table entitled "Projected Liability Incurrence and Release Dates". The table entitled "Cumulative Reclamation Liability" presents, for each year in which reclamation activities will take place, the total liability incurred, the amount of liability to be released, total liability for each year, and the cumulative reclamation liability for each year. A bar graph depicting cumulative reclamation liability is also attached.

The specific assumptions made in determining the year in which reclamation liability is incurred are:

- 1) reclamation liability is incurred when a pit is opened or when a disturbance related to other mining activities is initiated; and
- 2) current liabilities are assumed to include all existing disturbances to be reclaimed.

Assumptions made in the projection of the year in which reclamation liability would be released are as follows:

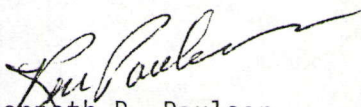
- 1) topsoil application is initiated and completed in the year following pit opening and/or stockpiling of the topsoil, and liability for topsoiling is released in that year;
- 2) revegetation is to be completed in the year in which topsoil is applied and liability released three years thereafter;
- 3) other reclamation liabilities are released in the year they are scheduled in the reclamation plan.

Brush Wellman proposes that an initial reclamation bond period of either 10 or 15 years be established. During the first 10 to 15 years, the maximum cumulative reclamation liability is \$154,800, incurred in 1998. We propose that this amount plus 10 percent for supervision, or \$170,300, be the base bond amount for the initial bond term. We further propose that the base amount for each subsequent bonding period be the maximum cumulative liability projected for that period. We understand that DOGM will add both a 10 percent contingency factor and the calculated escalation factor for the agreed-upon bond period to the bond amount.

In addition to the attachments described above, we have also attached revised bonding cost estimate spreadsheets which reflect the change in operator efficiency to 75 percent, or that of an average operator, as requested by DOGM staff.

We appreciate very much the cooperation of your staff during our July 12 visit to the mine. We believe that the bonding proposal presented herein fully addresses their concerns expressed to date. We look forward to successfully working with you and your staff to complete the establishment of surety for the Topaz Mining Property.

Brush Wellman Inc.


Kenneth R. Poulson
Vice President
Mining & Exploration

KRP/ks
Attachments (4)
cc: Frank J. Filas
Reclamation Engineer DOGM
JBR - Consultants

CUMULATIVE RECLAMATION LIABILITY

Year	Increased Liability	Released Liability	Year Total	Cumulative Total
1988	130,600		130,600	130,600
1989		20,400	-20,400	110,200
1990		3,000	- 3,000	107,200
1992		37,600	-37,600	69,600
1993	80,200	2,300	+77,900	147,500
1994	8,800	67,000	-58,200	89,300
1995		5,000	- 5,000	84,300
1997	200	13,200	-13,000	71,300
1998	88,500	5,000	+83,500	154,800
1999		74,100	-74,100	80,700
2001	80,200	9,500	+70,700	151,400
2002		81,300	-81,300	70,100
2004	45,700	4,200	+41,500	111,600
2005	88,400	42,200	+46,200	157,800
2006		74,200	-74,200	83,600
2008	38,600	31,000	+ 7,600	91,200
2009	88,500	43,500	+45,000	136,200
2010		74,900	-74,900	61,300
2011		8,700	- 8,700	52,600
2012	9,500	9,800	- 300	52,300
2013	100	15,200	-15,100	37,200
2014		2,900	- 2,900	34,300
2016	80,200		+80,200	114,500
2017	200	74,900	-74,700	39,800
2018		1,600	- 1,600	38,200
2019		5,800	- 5,800	32,400
2020	77,900	16,900	+61,000	93,400
2021		64,200	-64,200	29,200
2022		3,500	- 3,500	25,700
2024	91,600	14,700	+76,900	102,600
2025		72,700	-72,700	29,900
2028		18,900	-18,900	11,000
2030	100		+ 100	11,100
2031		100	- 100	11,000
2037		11,000	-11,000	- 0 -
TOTAL	909,300	909,300		

Brush Wellman Topaz Mining Property
Reclamation Costs

Topsoil Placement

Material: Topsoil
Load Factor (%): 70
Equipment: Cat 633D
Capacity (LCY): 34

Job Efficiency: 0.62
Equipment Cost (\$/hr): 144.00

	Area acres	Depth feet	Quantity CY	Haul Dist feet	Cycle Time min	Production cycles/hr	Product BCY/hr	Time hours	Adj Time hours	Cost \$
Southwind Dump										
Ore Pad	9.80	3.00	47432	900	3.60	16.67	397	120	193	27773
Remainder of Dump Top	31.44	1.50	76085	900	3.60	16.67	397	192	309	44549
Dump Slopes	3.20	1.50	7744	900	3.60	16.67	397	20	31	4534
Camp Dump										
Ore Pad	7.60	3.00	36784	1000	3.70	16.22	386	95	154	22136
Remainder of Dump Top	24.37	1.50	58975	1000	3.70	16.22	386	153	246	35491
Dump Slopes	3.30	1.50	7986	1000	3.70	16.22	386	21	33	4806
Monitor Dump										
Ore Pad	20.60	3.00	99704	1600	4.45	13.48	321	311	501	72163
Remainder of Dump Top	65.98	1.50	159671	1600	4.45	13.48	321	498	803	115566
Dump Slopes	6.70	1.50	16214	1600	4.45	13.48	321	51	81	11735
Roadside I&II										
Cover Backfilled Pit	39.68	1.50	96025	1000	3.70	16.22	386	249	401	57787
Section 16										
Ore Pad	18.00	3.00	87120	2000	4.80	12.50	298	293	472	68014
Remainder of Dump Top	56.50	1.50	136730	2000	4.80	12.50	298	460	741	106745
Dump Slopes	2.20	1.50	5324	2000	4.80	12.50	298	18	29	4156
Cover Backfilled Pit	17.88	1.50	43270	3500	6.10	9.84	234	185	298	42929

Total Cost (1988 Dollars): 618385

Push Topsoil Over Dump Tops on to Slopes

Material: Topsoil Equipment: Cat D8L
 Density (lb/cy): 1600 Equipment Cost (\$/hr): 125.00
 Job Efficiency: 1.07

	Quantity CY	Doze Dist feet	Max Prod CY/hr	Act Prod CY/hr	Act Time hours	Cost \$
Southwind Dump	7744	50	1800	1926	4.02	503
Camp Dump	7986	50	1800	1926	4.15	518
Monitor Dump	16214	50	1800	1926	8.42	1052
Section 16 Dump	5324	50	1800	1926	2.76	346

Total Cost (1988 Dollars): 2419

Cover Tuff Disposal Cells With Rhyolite

Material: Rhyolite Equipment: Cat D8L
 Density (lb/cy): 2550 Equipment Cost (\$/hr): 125.00
 Job Efficiency: 0.56

	Area acres	Depth feet	Quantity CY	Doze Dist feet	Max Prod CY/hr	Act Production CY/hr	Act Time hours	Cost \$
Roadside/Fluro Pit	5.95	3.00	28798	127	900	504	57.14	7142
Fluro #1 Pit	1.73	3.00	8373	69	1400	784	10.68	1335
Blue Chalk N #1&2 Pits	4.53	3.00	21925	111	1000	560	39.15	4894
Blue Chalk S #1 Pit	4.46	3.00	21586	110	1000	560	38.55	4818
Rainbow #1 Pit	5.23	3.00	25313	119	950	532	47.58	5948

Total Cost (1988 Dollars): 24137

Construct Rock Safety Berms Around Pits

Material: Rhyolite
 Density (lb/cy): 2550
 Job Efficiency: 0.56
 X-sect. Area (SF) 24
 Doze Distance (Ft) 50

Equipment: Cat D8L
 Equipment Cost (\$/hr): 125.00

	Length feet	Quantity CY	Max Production CY/hr	Actual Production CY/hr	Actual Time hours	Cost \$
Taurus	1750	1556	1800	1008	1.54	193
Sigma Emma	5600	4978	1800	1008	4.94	617
Fluro #2	1240	1102	1800	1008	1.09	137
Roadside/Fluro #3	1240	1102	1800	1008	1.09	137
Roadside/Fluro #4	1240	1102	1800	1008	1.09	137
Rainbow #2	1650	1467	1800	1008	1.46	182
Rainbow #3	1650	1467	1800	1008	1.46	182
Blue Chalk, N #3	760	676	1800	1008	0.67	84
Blue Chalk S #2	2125	1889	1800	1008	1.87	234
Blue Chalk S #3	2125	1889	1800	1008	1.87	234
Sec. 16, S #1	905	804	1800	1008	0.80	100
Section 16 S #2	905	804	1800	1008	0.80	100
Section 16 N #3	910	809	1800	1008	0.80	100
Monitor #1	1900	1689	1800	1008	1.68	209
Monitor #2	1775	1578	1800	1008	1.57	196
Monitor #3	1775	1578	1800	1008	1.57	196
Camp #1	3050	2711	1800	1008	2.69	336
Southwind #1	3550	3156	1800	1008	3.13	391

Total Cost (1988 Dollars): 3764

Road Reclamation (Ripping, Waterbars and Regrading; does not include Revegetation)

Material: Compacted soil
 Depth (feet): 2.00
 Job Efficiency: 0.62
 Assume 1 Waterbar/1000 Ft

Equipment: Cat D8H
 Equipment Cost (\$/hr): 127.00

	Length feet	Quantity CY	Max Production CY/hr	Actual Production CY/hr	Actual Time hours	Cost \$
Taurus	1600	4148	1250	775	5.89	748
Sigma Emma	3000	7778	1250	775	11.04	1402
Roadside I & II	1500	3889	1250	775	5.52	701
Rainbow	6000	15556	1250	775	22.08	2804
Blue Chalk South	3000	7778	1250	775	11.04	1402
Fluro	500	1296	1250	775	1.84	234

Total Cost (1988 Dollars): 7290

Rip Dump Tops

Material: Rhyolite & Tuff
 Job Efficiency: 0.62
 Depth (Ft) 1.00

Equipment: Cat D8H
 Equipment Cost (\$/hr): 127.00

	Area acres	Quantity CY	Max Production BCY/hr	Actual Production CY/hr	Actual Time hours	Cost \$
Sigma Emma Dump	13.28	21421	1650	1023	20.94	2659
Roadside I&II Dump	113.61	183253	1650	1023	179.13	22750
Rainbow Dump	58.03	93602	1650	1023	91.50	11620
Blue Chalk North Dump	24.45	39438	1650	1023	38.55	4896
Blue Chalk South Dump	48.37	78021	1650	1023	76.27	9686
Fluro Dump	64.90	104684	1650	1023	102.33	12996
Taurus Dump	33.32	53745	1650	1023	52.54	6672

Total Cost (1988 Dollars): 71279

Dump Berms (Top and Perimeter)

Material: Soil
 Depth: 3 feet
 Job Efficiency: 0.62

Equipment: Cat D8H & 16G
 Equipment Cost D8H (\$/hr): 127.00
 Equipment Cost 16G (\$/hr): 135.00

	Length feet	Quantity BCY	Max Prod BCY/hr	Act Prod BCY/hr	Time hours	Cost \$	16G Time hours	16G Cost \$	Total Cost \$
Roadside I&II	7596	6752	1750	1085	6.22	790	0.58	78	868
Sigma Emma	3126	2779	1750	1085	2.56	325	0.24	32	357

Total Cost (1988 Dollars): 1225

Revegetation Treatments

Item	Cost (\$/ac)
1 Scarify w/harrow	75
2 Seed cost	75
3 Seed Broadcassting	100
4 Fertilizer Cost	151
5 Fertilizer Broadcasting	30
6 Mulch Cost	100
7 Mulch Broadcasting	30
8 Back-dragging	50
9 Rabbitbrush Seed	21
10 Rabbitbrush Broadcasting	100

Revegetation Treatment I: Items 1 through 8

Total Cost (\$/ac): 611

	Area acres	Cost \$
Sigma Emma Dump Berm	0.57	348
Roadside I&II Dump Berm	1.40	855
Taurus Road	1.29	788
Sigma Emma Road	2.41	1473
Roadside I&II Road	1.21	739
Rainbow Road	4.82	2945
Blue Chalk South Road	1.61	984
Rainbow-Blue Chalk Road	0.80	489
Fluro Road	0.40	244
Mine Camps	18.00	10998

Total Cost (1988 Dollars): 19864

Revegetation Treatment II: Items 1 through 5, and 8
Total Cost (\$/ac): 481

	Area acres	Cost \$
Camp Dump	30.45	14646
Southwind Dump	39.28	18894
Monitor Dump	82.46	39663
Section 16 Dump	70.95	34127
Sec 16 N 1 & 2 Pit	17.88	8600
Roadside/Fluro Pit	39.68	19086

Total Cost (1988 Dollars): 135017

Revegetation Treatment III: Items 9 and 10
Total Cost (\$/ac): 121

	Area acres	Cost \$
Rainbow Dump	58.00	7018
Blue Chalk North Dump	24.40	2952
Blue Chalk South Dump	69.00	8349
Fluro Dump	64.90	7853
Taurus Dump	33.30	4029
Rainbow #1 Pit	34.90	4223
Fluro #1 Pit (partial)	6.90	835
Blue Chalk N #1 & #2 Pits	30.20	3654
Blue Chalk S #1 Pit	29.70	3594
Roadside I&II	39.68	4801

Total Cost (1988 Dollars): 47309



Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

(Exhibit 2)

December 21, 1988

Mr. Kenneth Poulson
Vice President
Mining and Exploration
Brush Wellman Incorporated
67 West 2950 South
Salt Lake City, Utah 84115

Dear Mr. Poulson:

Re: Reclamation Bonding, Topaz Mine, M/023/003, Juab County, Utah

Thank you for meeting with us last Tuesday, December 20, 1988. As discussed during our meeting, the revised bond amount for the current 15 year period will be \$311,300. This is based on the following:

Maximum cumulative liability (15 years) and 10% Supervision Cost	\$201,200
10% Contingency	\$ 20,100
Escalation at 2.3% per year	<u>\$ 90,000</u>
Total	\$311,300

This amount covers the first 15 year period from 1988 until the year 2004. The bond would be revised each 15 year period, using the same formula.

We look forward to working with you further in completing the bonding, and finalizing your permit application.

Sincerely,

Lowell P. Braxton
Administrator
Minerals Resource Development
and Reclamation Program

jb
MN5/55

(February 1986)

NONCOAL

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203
(801) 538-5340

SELF BONDING AND INDEMNITY AGREEMENT

This Self Bonding and Indemnity Agreement (hereinafter referred to as "Agreement") entered into by Brush Wellman Inc. (hereinafter referred to as "**Brush**") and the state of Utah, Department of Natural Resources, Board of Oil, Gas and Mining (hereinafter referred to as "Board"),

WITNESSETH

WHEREAS, Brush has obtained Permit No. M/023/003 from the Division of Oil, Gas and Mining to operate the Topaz Mine in Juab County, Utah as a(n) open-pit beryllium mine under the Mined Land Reclamation Act, Utah Code Annotated, 40-8-1 et seq, 1953, as amended ("Act") and implementing regulations; on the premises specifically described in EXHIBIT A; and

WHEREAS, Brush wishes to obtain a bond to operate a(n) Open-pit beryllium mine under Permit No. M/023/003 under 40-8-14(3); and

WHEREAS, Brush has designated Kenneth R. Poulson, Vice-President, Mining & Exploration, Brush Wellman Inc.

(Name, Title, Address)

67 West 2950 South, Salt Lake City, UT 84115

as its agent for Service of Process in the state of Utah, and

WHEREAS, Brush has been in continuous operation as a business entity for the last five years; and

WHEREAS, Brush meets financial criteria for self bonding (as shown in the ~~attached~~ ^{attached} financial sheet); ~~and~~ (see Self Bonding Qualification Sheet with Exhibit "B" through "E" attached hereto.)

WHEREAS, Brush has submitted to the Division of Oil, Gas and Mining and Board financial statements which are accompanied by an audit opinion prepared by Ernst & Whinney Brush Wellman Inc. as contained in the ¹⁹⁸⁷ Annual Report (Exhibit "B" to (Accountant's Name) Self Bonding Qualifications Sheet.)

NOW, THEREFORE, in consideration of the premises and other good and valuable consideration, the sufficiency and receipt of which is hereby acknowledged, Brush does hereby agree to be held and bonds to the Board for the sum of \$311,300 for the timely performance of reclamation responsibilities for Topaz Mine, Permit No. M/023/003 in lawful money of the United States. By the submission of this Agreement, Brush will and truly binds itself, its successors and assigns, jointly and severally, by these presents.

The conditions of the above obligations are such that:

1. Brush shall perform all duties and fulfill all requirements applicable to reclamation as set forth in the Act, the regulations adopted pursuant to

the Act and the conditions of the permit to conduct
open-pit beryllium mining operations, Permit
No. M/023/003 issued by the Division.

2. The liability ^{of Brush} under the Agreement is conditioned upon successful reclamation of the permit area as provided in the reclamation plan for Permit No. M/023/003 for a period of time and in the manner specified in the Act, regulations adopted pursuant thereto, and the conditions set forth in Permit No. M/023/003 issued by the Division. At no time shall the liability or responsibility of Brush hereunder exceed the sum of \$311,300. Provided, however, that the Board may adjust the amount of liability hereunder as provided in Section 6 hereof.
3. Brush does hereby agree to indemnify and hold the Board harmless from any claim, demand, liability costs, charge or suit brought by a third party, as a result of Brush's failure to abide by the terms and conditions of the Reclamation Plan as set forth in the mining Permit No. M/023/003 and from any failure to comply with the terms of the Agreement.
4. The Board shall give Brush, or its designated agent herein, notice of any claim and any legal proceedings within the scope of the indemnity set forth at Section 3.

5. Upon successful completion of part or all of the obligations secured hereby, Brush may petition the Board for a final release of part or all of the obligations under this Agreement. Upon such petition, the Division of Oil, Gas and Mining shall conduct an inspection to ascertain whether duties and obligations of Brush under the Act, regulations adopted pursuant thereto and Permit No. M/023/003 have been fulfilled. If such duties and obligations have been fulfilled, the Board shall release Brush from part or all of its obligations under this Agreement and shall file a notice of such release in the property records of Juab County, Utah.
6. This Agreement shall be reviewed periodically by the Division of Oil, Gas and Mining, or reviewed upon petition by Brush in accordance with the Act and implementing regulations and the amount of liability under this Agreement may be adjusted if the Division determines that the cost of future reclamation has materially changed.
7. This Agreement may be terminated upon 90 days prior written notice to the Board if terminated by Brush or upon 90 days prior written notice to Brush if terminated by the Board.

Upon such written notification, Brush
will have 90 days to obtain an alternate form of bond
satisfactory to the Division to secure reclamation
obligations for Permit No. M/023/003 in the same amount
as stated herein and amendments thereto.

8. Failure to provide a satisfactory alternative form of bond
will result in the complete cessation of all mining
operations and the complete reclamation of all disturbed
areas within the Topaz Mine permit area.
9. Any breach of the provisions of paragraph #8 of this
agreement will result in the payment of \$ 311,300
(bond amount) in liquidated damages to the Division.
10. This agreement will be governed and interpreted according
to Utah law.

SO AGREED this 9th day of January,
19 89.

COMPANY NAME BRUSH WELLMAN INC.

Date 1/9/89

By C. G. Waite C. G. Waite
Corporate Officer - Position
Vice President and Chief Financial Officer

Date 1/9/89

By M. C. Hasychak M. C. Hasychak
Corporate Officer - Position
Assistant Treasurer, Assistant Secretary

Chairman
Board of Oil, Gas and Mining

Date _____

By _____
Gregory P. Williams

APPROVED AS TO FORM:

Assistant Attorney General

STATE OF Ohio)
COUNTY OF Cuyahoga) ss:

On the 9th day of January, 1989, personally appeared
before me C. G. Waite and M. C. Hasychak who
being by me duly sworn did say that he/she, the said _____
C. G. Waite is the Vice President & Chief Financial Officer
Brush Wellman Inc. and said M. C. Hasychak is
the Ass't Treas. & Ass't Secy of Brush Wellman Inc.
and said instrument was signed in behalf of said corporation by
authority of its bylaws or a resolution of its board of directors
and said C. G. Waite and M. C. Hasychak duly
acknowledged to me that said corporation executed the same.

SEAL

Diane M. Barben
Notary Public

DIANE M. BARBEN
Notary Public, State of Ohio
Recorded in Cuyahoga County
My Comm. Expires 10-23-90

Notary Public
Residing at: _____

My Commission Expires:

STATE OF _____)
COUNTY OF _____) ss:

On the ____ day of _____, 198__, personally appeared before me Gregory P. Williams, Esq., who being by me duly sworn did say for him, that he, the said Gregory P. Williams is the Chairman of the Board of Oil, Gas and Mining, Department of Natural Resources, state of Utah, and he duly acknowledged to me that said Board executed the foregoing document by authority of law on behalf of the state of Utah.

Notary Public
Residing at: _____

My Commission Expires:

EXHIBIT A

**Location of Brush Wellman Inc. Topaz Mining Property
Reclamation Plan**

Juab County, Utah

Section 31 and 32, Township 12 South,
Range 12 West SLBM

Sections 4, 5, 6, 7, 8, 9, 10, 16 and 17,
Township 13 South, Range 12 West SLBM

January 11, 1989

For the following exhibits please see the Brush Wellman,
M/023/003, Bond File, in Central Files:

Exhibit B	Brush Wellman 1987 Annual Report
Exhibit C	Brush Wellman 1st Quarter 1988 Report
Exhibit D	Brush Wellman 2nd Quarter 1988 Report
Exhibit E	Brush Wellman 3rd Quarter 1988 Report

jb
MN4/71

NONCOAL
(August 1985)

Mine Name Topaz
Permit No. M/023/003
Date _____
Checked By _____

SELF BONDING QUALIFICATION SHEET
(Brush Wellman Inc. meets criterion #3)

Applicant Required to Meet One of the Following Criteria:

1. Current rating for most recent bond issuance ("A" or higher) (Moody's Investor Service or Standard and Poor's Corporation)

NA

or

2.

- A. Tangible Net Worth = (at least \$10 million) (Net worth minus intangibles [Goodwill and rights to patents or royalties])

NA

- B. Total Liabilities/Net Worth = Obligations to transfer to other assets or provide services to other entities/Total assets minus total liabilities and is equivalent to owner's equity (2.5 times or less).

NA

- C. Current Assets/Current Liabilities = Cash or other assets or resources which are reasonably expected to be converted to cash or sold or consumed within one year/Obligations which are reasonably expected to be paid or liquidated within one year (1.2 times or greater).

NA

Reference: _____

or

3.

- A. Fixed assets in the United States (at least \$20 million) =

\$128,315,000

Property, Plant and Equipment

B. Total Liabilities/Net Worth
(2.5 times or less) =

Current Assets/Current
Liabilities (1.2 times or
greater) =

Reference: Third Quarter Report 1988
Brush Wellman Inc.
(copy attached, Exhibit "E")

	<u>.43</u>
	<u>(108,126,000)</u>
	<u>248,877,000</u>
	<u>2.87</u>
	<u>(159,588,000)</u>
	<u>(55,555,000)</u>

Suitable agent (resident within the state of Utah)

Kenneth R. Poulson Vice-President, Mining & Exploration
67 West 2950 South
Salt Lake City, UT 84115

Been in continuous operation of not less than five (5) years
(immediately preceding the time of application) (submitted five
annual reports--Yes XX No)

(i) Financial statements prepared by an independent certified
public accountant in conformity with generally accepted accounting
principles. Yes XX No (1987 Annual Report, copy attached, Exhibit "B")

(ii) Unaudited financial statements for completed quarters in
the current fiscal year. Yes XX No (1988 1st, 2nd and 3rd Quarter
Reports, copies attached, Exhibits "C"

(iii) Additional unaudited information as requested by the "D" and "E"
Division.